THE RELATIONSHIPS BETWEEN SELECTED TEACHER BEHAVIORS AND THE ACADEMIC ACHIEVEMENT OF ACADEMICALLY TALENTED BLACK STUDENTS

BY

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS ii

ABSTRACT v

CHAPTERS

I INTRODUCTION 1

Problem Statement 1
Hypotheses 1
Selection of the Hypotheses 3
Need for the Study 4
Definition of Terms 9
Scope of the Study 11
Limitations 12
Organization of the Study 13

II SURVEY OF RELATED LITERATURE 14

Introduction 14
Teacher Behaviors 15
Process-Product Research 15
Teacher Efficacy 20
Teacher Expectations 21
Summary 29

III THE DESIGN OF THE STUDY 31

Hypothesis 31
Study Design 31
The Study Participants 32
Instrumentation 34
Data Collection 41
Teacher Behaviors Data 41
Student Achievement Data 43
Data Analysis 43

IV RESULTS OF THE STUDY 46

Relationships Between Teaching Behaviors and Student Achievement 48
Summary of Results for Correlations of Individual Teacher Behaviors and Student Achievement Outcome Measures 54

V SUMMARY, DISCUSSION, CONCLUSIONS, AND SUGGESTIONS FOR FURTHER RESEARCH 58

Summary 58
Discussion 61
Questioning and Responding Behaviors 62
Affect or Classroom Climate 66
Time on Task 67
Conclusions 68
Suggestions for Further Research 69

APPENDIX

A MODIFIED CLASSROOM OBSERVATIONS KEYED FOR EFFECTIVENESS RESEARCH INSTRUMENT AND KEY 73

REFERENCES 77

BIOGRAPHICAL SKETCH 81

Abstract of Dissertation Presented to the Graduate School of the University of Florida in Partial Fulfillment of the Requirements for the Degree of Doctor of Education

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The purpose of this study was to determine relationships between the use of selected teaching behaviors by teachers of academically talented black students and the academic achievement of those students. The investigation of the relationships included an analysis of the influence of the effects of the differences between schools and differences within schools upon the relationships.

The 18 teaching behaviors which constituted this study were the core component of a staff development program entitled "Make A Difference" developed in a large urban school district in northeast Florida for the teachers of academically talented black students in an effort to reduce the gap between the performance of black and white students. A review of the literature revealed that while the teacher effectiveness research had resulted in generalizations about teaching behaviors associated with achievement outcomes for students in primary grade levels and of lower socioeconomic status, research was lacking on the relationships between selected teacher behaviors and the

achievement of middle and high socioeconomic status black students in grades six and above.

Three sets of product moment correlations were obtained to determine the relationships between the teaching behavior scores of teachers and the achievement scores of students. The results of the correlational analyses showed 16 statistically significant ($p < .10$ for seven comparisons, $p < .05$ for seven, and $p < .01$ for two) correlations to exist between the use by teachers of selected individual teaching behaviors from the "Make A Difference" staff development model and achievement outcomes for academically talented black students as measured by the total mathematics and total reading portions of the Stanford Achievement Test. Over the three sets of correlations, 10 of the 18 teacher behaviors (six questioning and responding, three classroom climate, and one time on task) were found to be significantly related to student achievement. In each case the relationship was a negative one indicating that the use of the behavior was associated with lower achievement gains. These findings should be viewed with some caution because the 20 minutes of observation used in this study yielded a relatively low (.40 to .50) reliability that an accurate picture of the teachers' prevailing instructional practices were being obtained.

These findings, while not supportive of the use of the teacher behaviors from the "Make A Difference" model to promote achievement gains on the Stanford Achievement Test, were generally consistent with the findings of process-product research done at the primary level with lower socioeconomic status students.

CHAPTER I
INTRODUCTION

Problem Statement

The problem was to determine relationships between the use of selected teaching behaviors by teachers of academically talented black students and the academic achievement of those students. The investigation of the relationship included an analysis of the influence of the effects of the differences between schools and the differences within schools upon the relationships.

Hypothesis

There will be no significant relationships between the use of selected individual teaching behaviors by the teachers and the achievement of their academically talented black students (a) at the school level, (b) at the teacher level when both between and within school effects are allowed to have influence, or (c) at the teacher level when school-level effects are eliminated. In the analysis of the data, significance at the .10 level was a minimum for rejection of the null hypothesis.

This null hypothesis was tested for 18 variables of effective teacher behaviors taken from the work of Homer and Joan G. Coker

(1982) and Donald M. Medley (1977). For each of the following, the teacher

1. encourages student-initiated verbal interaction;
2. amplifies and discusses student responses;
3. requires that students are involved (time on task);
4. prepares and/or uses various methods and techniques to present subject matter and encourages student participation;
5. promotes positive self-image in students;
6. is consistent and empathetic in the treatment of students;
7. practices good human relations;
8. exhibits overall positive approach;
9. stimulates group discussion and individual participation;
10. nurtures creativity and discovery;
11. helps learner develop positive attitude toward self;
12. seeks, accepts, and uses student ideas as part of teaching procedures;
13. motivates students to ask questions;
14. uses questions that lead students to analyze, synthesize, and think critically;
15. accepts varied student viewpoints and/or asks students to extend or elaborate answers or ideas;
16. demonstrates proper listening skills;
17. provides feedback to learners on their cognitive performance;
18. uses positive reinforcement patterns with students.

Selection of the Hypothesis

The major hypothesis of this study, which consisted of the relationships between the use by teachers of the selected behaviors and the achievement of their academically talented black students, was chosen because the gap between the achievement of white and black students is a concern and data in this area are limited. The teaching behaviors chosen for investigation came from the work of Medley (1977) and Coker and Coker (1982). These behaviors had not been applied with a group of students distinguished by the attribute variables of high socioeconomic status, grade level six or above, and racial designation black.

The 18 teaching behaviors were chosen primarily because they were supportive of the determination of district-level decision makers to provide a nurturing classroom environment for academically talented black students through the "Make A Difference" staff development program. The availability of scoring keys for these behaviors and of items on the observational instrument used in the "Make A Difference" program which could measure these behaviors were also considerations in this decision. The "Make A Difference" model was designed to enhance achievement by focusing teachers' attention on the importance of encouraging students to answer questions thoughtfully, to elaborate on their own responses and the responses of their classmates, and to build the students' confidence in their ability to think and respond.

It had some features in common with the direct instruction model which resulted from the Rosenshine (1976) review of the available process-product research. However, while the "Make A Difference" model included teaching behaviors which promoted students' asking as well as answering questions and the teachers' use of students' ideas as a basis for further questioning, the direct instruction model called for learning to be organized around questions asked by the teacher and for the teacher to ask narrow, direct questions that have only a single answer (p. 369). Since the teaching behaviors which constituted the direct instruction model resulted from findings from studies done only with primary level, low socioeconomic status students, there was no compelling evidence to suggest that the behaviors from the direct instruction model were more appropriate for academically talented black students at the secondary level than those from the "Make A Difference" model.

Need for the Study

In the 1980s the educational excellence movement got some impetus from local school improvement efforts. Also, the concern for declining achievement test scores in the late 1970s played a major part in bringing an emphasis on educational excellence to the forefront. In the middle of the 1980s, while there was no national consensus about what excellence meant, appropriate teacher behaviors and increased student learning seemed to be a part of most discussions

on excellence. Honig (1985) made the following observation while discussing the growth of the educational excellence movement:

> Starting in isolated classrooms, schools, and districts, it [the educational excellence movement] has been nurtured by public and political attention. The National Commission on Excellence in Education, Ernest Boyer, John Goodlad, Theodore Sizer, and many other groups and individuals have provided much-needed ideological support. Many states have placed education high on the political agenda and passed legislation containing both reforms and the resources to pay for them. Now, educators must face the tougher task of translating these general ideas of excellence and broad structural changes into widespread improvements in the quality of instruction and student performance. (p. 675)

Thus, it would seem that the attainment of educational excellence will come largely through concerted efforts in inservice teacher training programs that will indeed improve the quality of instruction and promote academic achievement by students.

The process-product research of the 1970s yielded knowledge about the relationships between teacher behaviors and pupil learning. As Brophy (1979) noted when discussing this research,

> these studies [reviewed by Rosenshine, 1976; Medley, 1977; Borich and Fenton, 1977; and Good, 1979] varied in the types of teachers and students included and the kinds of variables addressed and methods used, but there was sufficient overlap and replication to provide dependable knowledge about relationships between teacher behavior and student learning of basic skills in the elementary grades. (p. 33)

The findings from the process-product research generally supported the notion that there were appropriate teaching behaviors for students of high socioeconomic status and different teaching behaviors for low

socioeconomic status students at the lower grade levels. The Medley (1977) review was one of the most notable of the reviews of the process-product research. When assessing this review, Soar and Soar (1979) indicated that the stringent quality criteria and classification of the findings by pupil socioeconomic status, grade level, and the nature of the outcome measures made it a classic. In addition, they called most significant the finding from the study that when the same teacher behaviors were compared for low and high socioeconomic status pupils in more than 60% of the instances different results were found for the two groups.

Studies conducted subsequent to the Medley review have investigated the generalizability of the causal relationships of teacher behavior to student learning at higher grade levels (Evertson, Anderson, & Anderson, 1980; Evertson, Anderson, & Brophy, 1978; Stallings, Needles, & Stayrook, 1979). While these studies seemed to support the generalizability of the findings to the secondary grade levels, more investigations were needed in order to determine their applicability for teachers of students with selected attribute variables such as socioeconomic status, grade level, and race.

Of these student attribute variables, race seemed particularly worth attending to in the middle of the 1980s because of the gap that remained between the achievement of black and white students. A report by the Educational Testing Service (Mann, 1984) cited evidence

from Scholastic Aptitude Test scores, College Board Achievement Tests, the National Assessment of Educational Progress (NAEP) in reading and mathematics, enrollment in advanced academic courses, and scores on the Graduate Record Examination to show that the academic performance of minority students was improving and that while the educational gap in test scores between white and minority students still existed, it was closing. The following conclusion from this report strongly supported the development of quality programs accessible to minority students:

> These improvements in test performance and in enrollment in rigorous academic courses make it clear that minority students can and do achieve when they have access to high-quality instruction and the educational support and encouragement they need. (Mann, 1984, p. 4)

Thus, there was support for a careful study to determine how to help teachers provide the good programs and nurturing environment these students need.

Focusing on the teacher and the classroom as the point for intervention resulted from the prevailing notion that the responsibility for effective instructional delivery (the use of those teacher behaviors which best promote student learning) rests with the teacher. Smith (in Medley, Coker, & Soar, 1984) described this phenomenon in the foreword to a book on measurement-based teacher evaluation.

> Before the present century, it was widely held that the student was responsible for learning; that the responsibility

> of the teacher was to hear recitations and to maintain order. Today, almost the opposite view is held; that the teacher is at fault if the student does not learn. While pedagogical literature abounds with opinions and research evidence that the effects of competent instruction are often neutralized by the poverty of the experiences and low aspirations of students, still it is generally believed that lack of learning is attributable to flawed instruction. (p. xiii)

The prevalence of the perception that the responsibility for effective instructional delivery rests with teachers influenced the design of a program of intervention for this study. A staff development program entitled "Make A Difference" was written. The core component of this program was the use of teaching behaviors selected from the process-product research which seemed most likely to affect the achievement of academically talented black students in grades six and above. The teacher behaviors included those which incorporated a degree of teacher efficacy and teacher expectations for students' performance. The demonstration of the 18 teacher behaviors by teachers should indicate that a quality program of instruction was delivered in a nurturing environment.

In summary, renewed attention to educational excellence made it desirable that inservice training programs for teachers be developed to improve the quality of instruction and promote academic achievement by students. The process-product studies of the 1970s were likely sources of information for the design of such a program. Findings from this research led to generalizations about appropriate teaching

behaviors for the student attribute variables of socioeconomic status at selected grade levels. However, the generalizability of these findings to students distinguished by the attribute variables of grade levels above fifth, a minority racial designation, and high academic achievement had not been investigated. The paucity of research on the relationships between the achievement of black students and the use by teachers of behaviors deemed effective by the product-process research substantiated the need for this study. Furthermore, the need for the study was supported by the suggestions from the analyses of test results and other indicators at the national level that the academic performance of minority students was improving in instances where improving educational opportunities were provided. It seemed likely that the gap between the academic performance of white and black students could be decreased further with a quality program of instruction delivered in a nurturing environment.

Definition of Terms

Academically talented students. This term is used to describe students scoring at or above the 85th percentile on the reading or mathematics portions of the Stanford Achievement Test administered in the spring of 1984.

Attribute variables. This term is used to describe input characteristics of socioeconomic status, grade level, race, and achievement level which distinguished the students in this study.

Low inference observation instrument. This term refers to a data collection form that clearly defines specific teaching behaviors to the extent that any observer can record the presence or absence of the behaviors while observing a teacher teaching with little chance for observer subjectivity or bias.

Nurturing environment. This term refers to a classroom environment where the teacher's verbal and nonverbal behavior is emotionally neutral to warm and in which students display feelings of acceptance.

Presage variables. This term refers to the characteristics of teachers such as teachers' expectations for students that influence the use of the selected teaching behaviors.

Process-product study. This term refers to research which involves operationally defining a set of teacher behavior variables, counting the occurrence of these behaviors in a number of classrooms for a fixed period of time, and correlating the frequency of the teacher behaviors with average student achievement scores measured at the end of the observation period (Clark, 1979).

Teaching behaviors. This term is used to refer to general statements which characterize effective teachers and which are operationally defined and measured by clusters of overt behaviors exhibited during interactions between the teacher and students in instructional settings. "The extent to which the competency is

possessed by the teacher is inferred from the behavior or performance of the teacher as demonstrated in the classroom" (Coker & Coker, 1982, pp. 2-3).

Teacher effectiveness research. This term refers to correlational studies of teachers in classrooms which compared teacher behaviors with student achievement scores to identify effective teaching practices.

Scope of the Study

This study was limited to six schools in a large urban district in northeast Florida. The principals of these schools volunteered to participate in a district staff development program entitled "Make A Difference." There were two sixth grade centers, two junior high schools, and two senior high schools. Four of the principals were black, and four of the six were men. Seventy-nine teachers from these schools volunteered to complete the program. These teachers taught academic subjects in departmentalized situations to the students. There was a wide range of teaching experience for the participants. Fifty-five, or 70%, of the teachers were females. Thirty-six, or 46%, were black. These numbers exceeded the district percentages for teachers of 58% female and 30% black. A total of 116 academically talented black students of the teachers comprised the student participants in this study. Teacher effectiveness was determined by 18 statements taken from the work of Medley (1977) and Coker and Coker

(1982). Teacher effectiveness was measured by the Modified COKER instrument derived from the Classroom Observations Keyed for Effectiveness Research (COKER) instrument (Coker & Coker, 1982) keyed for 18 statements of competence of Medley (1977) and Coker and Coker (1982). (The Modified COKER instrument can be found in Appendix A.) Student achievement was measured by the mathematics and reading subtests of the Stanford Achievement Tests administered in the spring of 1984 and the spring of 1985.

Limitations

1. The schools in this study were not randomly selected. They were chosen because of their high level of participation during Wave I of the "Make A Difference" staff development program.
2. Teachers who volunteered to participate in the "Make A Difference" training were used in this study. The faculties of the schools were not a random sample of the teachers in the school or the district. The limitation of self-selected volunteers was a possible threat to internal validity; the threat means that in such situations the interaction of selection-maturation could be mistaken as a treatment effect (Ary, Jacobs, & Razavieh, 1978).

3. The generalizability of any findings from this study should be confined to teachers similar to those in this study teaching the academic subjects of language arts, mathematics, science, and social studies to students distinguished by the attribute variables of concern in this study.

Organization of the Study

Chapter I has presented the problem the study has investigated, the need for the study, and the specific questions to be addressed. Chapter II contains a review of the literature related to the topics under consideration in this study. The procedures for the collection and analysis of the data are presented in Chapter III. Chapter IV reports the results of the data collection and data analyses. Chapter V contains a discussion of the results and implications of the study and includes recommendations for further research.

CHAPTER II
SURVEY OF RELATED LITERATURE

Introduction

The problem in this study was to determine relationships between the use of selected teaching behaviors by teachers of academically talented black students and the academic achievement of those students. The investigation of the relationships included an analysis of the influence of the effects of the differences between schools and the differences within schools upon the relationships. This chapter presents a review of the literature related to this study on the topic of teacher behaviors. Teacher behaviors comprised the instructional activities which the teacher does or does not exhibit in the classroom that affect student achievement. This category includes information about those specific responses which can be described and demonstrated which have been shown through the process-product research to affect student achievement. Such behaviors are observable. This category also includes information related to teacher expectations, a teacher presage variable (Dunkin & Biddle, 1974). It is included because it is a component which comprises several of the 18 teacher behaviors, and it influences the teacher's use of the teaching behaviors. The effects of this presage variable is observable.

Teacher Behaviors

Process-Product Research

Teacher behaviors associated with achievement gains in students were of primary interest in this study. Findings from the process-product research of the 1970s were the major source of information about these behaviors. The process-product studies involved correlating the occurrence of teaching behaviors with average student achievement scores. From these studies it became known that the practices of effective teachers differ from those of less effective teachers, with effectiveness determined by results from student outcome measures such as standardized achievement tests. These studies have not resulted in the identification of causal relationships between teacher behavior and student gains; however, "they can tell us quite a lot about how competent and less competent teachers differ in their classroom behavior, even though we may not know exactly why" (Medley, 1977, p. 6).

Rosenshine (1976) reviewed research studies available from evaluation efforts for Follow Through and other programs for students in primary grades of lower socioeconomic status. From reviews of relationships between classroom teaching variables and student achievement, he derived a general model known as "direct instruction." Findings from his work were generalizable to instruction in reading and mathematics at the primary level with students distinguished by

the attribute variable of low socioeconomic status. Elements in the models include (a) time and activities structured by the teacher, (b) work groupings supervised by the teacher, (c) teacher rather than student choice of activities, (d) teacher questioning behavior characterized by low-level cognitive questions, (e) a high rate of responding and a high percentage of correct answers by students, and (f) immediate academic feedback reinforcing student responses (Rosenshine, 1976, pp. 369-370).

After Rosenshine, another review of the process-product research was done by Medley (1977). That review was notable for the stringent quality criteria used for selecting the studies to be reviewed. These criteria are listed below.

1. The study from which a relationship came had to be designed so that the relationship was generalizable to some population of teachers larger than the sample studied.
2. The relationship had to be both reliable enough to be statistically significant and large enough to be practically significant.
3. The measure of teacher effectiveness had to be based on long-term pupil gains in achievement areas recognized as important goals of education.
4. The process measure had to specify the behaviors exhibited in such a way that they could be reproduced as desired. (Medley, 1977, p. 5)

When Medley applied these criteria to the numerous reported relationships between teacher behavior and student achievement contained in the 289 studies reviewed, 613 correlations from 14 of the studies remained.

In addition to the quality of the standards, another distinction of the Medley review was the method used to report the results. The data were first classified by the behavior measure into 43 categories such as pupil initiations, group size, and praise. Within each category the data were further grouped by pupil grade level, type of pupil gain measure (reading, mathematics, or affect), and further delineated by level of complexity and pupil group socioeconomic status. Soar and Soar (1979) reported that this system of classification of results was an important advance because it established consistencies in effects that have otherwise appeared to be inconsistent.

From the 613 relationships from the 14 studies, Medley (1977) formulated 13 student outcome statements which indicate the relationships of teacher behaviors and student achievement. These statements, which characterized effective instruction, include the following:

1. When teachers work with large groups rather than small groups, student gain is more likely to occur.
2. When small groups work without adult supervision, student gain is less likely to occur.
3. Seatwork by the student is more effective when there is an appropriate balance between teacher focusing and structuring and student choice of either what, how, or when.
4. An increase in structured academic time is associated with greater student gains.
5. When students initiate verbal interactions, gain is less likely in lower grades but more likely in intermediate and higher grades.
6. Student correct, substantive responses to teacher questions are related to greater student gain.

7. High, cognitive level questions relate negatively to student gain and low cognitive level questions relate positively to student gain, even for complex learning outcomes.
8. When teachers amplify and discuss student responses, high socioeconomic status students tend to show greater gain than do low socioeconomic status students.
9. Teacher hostility and rebuking behavior relate negatively to student gain.
10. Disruptive student behavior is negatively associated with student gain.
11. Student involvement (time on task) is associated positively with student gain.
12. Non-substantive interaction between teacher and students relates negatively with student gain.
13. Unstructured student behavior is negatively related to student gain for a given learning task; a balance between teacher structuring and student freedom provides the optimal setting for student gain. (Medley, 1977, p. 10)

Soar and Soar (1979), in a review of process-product research, supported the use of Rosenshine's (1976) direct instruction model for basic skills instruction in the primary grades. However, they questioned the appropriateness of this conception of teaching for all objectives. Their analysis indicated that for learning more complex cognitive objectives that learning activities not be as tightly structured as implied in the direct instruction model. However, with regard to classroom environment, they did find that for all objectives and all pupils that pupils learn more in classrooms where expressions of negative affect—criticism, scolding, or humiliating students—occur relatively infrequently. They concluded that this generalization, strongly supported by the research, and another concerning minimizing disorder, which they indicated was somewhat less

strongly supported, provided evidence for teacher behaviors which seemed likely to improve schools as places where students learn.

Brophy and Good (1986), in an article in the third edition of the Handbook of Research on Teaching, reviewed the process-product research done since 1973. Of the 202 references cited, only 67 (32%) were published in the 1980s. They noted that there has been little systematic research linking teacher behavior and student achievement primarily because of cost. "Except for a brief period in the 1970s when the National Institute of Education was able to fund several large field studies, investigators have not had the resources needed to do process-product studies" (p. 329). From their review, they concluded that (a) the myth that teachers do not make a difference in student learning has been dispelled, (b) complex instructional problems cannot be dealt with using simple prescriptions, (c) successful teachers differ from their less successful colleagues in several respects including the expectations and achievement objectives they hold for their own performance and the performance of the class as a whole and individual students in the class, (d) teacher education must focus on both subject matter and pedagogy which includes making teachers aware of the findings from the teacher effectiveness research, and (e) more research on teaching in general and particularly on teacher effects is needed (p. 370).

Four major reviews of the research on process-product relationships (Brophy & Good, 1986; Medley, 1977; Rosenshine, 1976;

Soar & Soar, 1979) resulted in generalizations about teacher behaviors and student outcomes. Furthermore, specific teacher behaviors which were associated with cognitive gains in students as measured by standardized achievement tests were identified. The review of the literature indicated that there was strong support for using the generic teacher competencies identified by the major reviews of the process-product research for instructional improvement efforts. However, it was also apparent that further research was needed in which the generic competencies were tested with high socioeconomic status/high achieving students and low socioeconomic status/high achieving students in order to confirm their effectiveness with high as well as low socioeconomic status students. There also seemed to be a need to determine if the student outcomes linked to the generic competencies were consistent for high achieving minority students.

Teacher Efficacy

Teachers' feelings of efficacy was one of two teacher presage variables (Dunkin & Biddle, 1974) which were reviewed for this study because of its potential for influencing the adoption of the teaching behaviors of interest in this study by the teachers of academically talented black students. Findings from the process-product research supported the idea that teachers can and do make a difference in the achievement of their students. The extent to which teachers believe they have the capacity to affect student performance seemed to be a

key variable. The belief in the capacity to exert influence has come to be known as "efficacy." The strong correlation between the teacher's sense of efficacy and the achievement of his or her students has been demonstrated by research such as that done by Ashton, Webb, and Doda (1983). In addition to the significant relationship between teacher efficacy and student achievement, these researchers reported that "teachers with a high sense of efficacy are more likely to be attentive to the individual needs of all students and to respond to students in a positive, accepting, supportive style that encourages student enthusiasm and involvement in decision-making" (Ashton, Webb, & Doda, 1983, p. 7). This is an emerging construct for which few studies were available. Teacher efficacy is viewed as a complex of teacher behaviors which can be treated as a variable and as such may influence teacher behavior.

Teacher Expectations

Teacher expectations for their students' achievement was the second of the teacher presage variables which was considered relevant to review for this study because teachers use different teaching behaviors with students for whom they have high expectations in contrast to those for whom they have low expectations. Black students often have not had the benefits of high expectations from their teachers. High expectations for the achievement of all students characterized schools that have been found to be effective in

promoting student achievement. Murphy, Weil, Hallinger, and Mitman (1982) suggested that in effective schools the staff believed in the student's ability to master basic skills, earn good grades, complete school successfully, and go on to higher education. The classrooms were characterized by an academically demanding climate and an orderly well-managed environment. Teachers used instructional practices that promoted achievement. They held students accountable for their own work which communicated to the students that they were expected to succeed and that the ability to do so was under their control. These authors also suggested that a supportive environment with satisfying human relationships was important. This meant that teachers were concerned, helpful, and interested in their students' ideas and problems. It also meant that teachers encouraged students to care and be concerned for one another.

The influence of teacher expectations on the treatment of students has been investigated by a number of other researchers. Good and Brophy (1969) found that students perceived as high achievers had three to four times more response opportunities than students perceived to be low achievers. These same researchers later observed the dyadic contacts between teacher and students in four first grade classrooms and found

> the teachers demanded better performance from those children for whom they had higher expectations and were more likely to praise such performance when it was elicited. In contrast, they were more likely to accept poor performance

> from students for whom they held low expectations and were less likely to praise good performance from these students when it occurred, even though it occurred less frequently. (Brophy & Good, 1970, p. 365)

Adams and Biddle (1970) found that physical placement in the classroom affected the extent of student participation with students up and down the center line of the classroom being the ones most likely to interact with the teacher. Rist (1972) found that students perceived to be the most able by the teacher were generally seated together and that the teacher worked in closer proximity to those students and also spent more time interacting with them. An early study in this area was that of Davis and Dollard (1940) which found that lower class black children were not given the same response opportunities as middle and upper class children because of family background, dialect, appearance, and probably the darkness of the skin. An even earlier study by Horn (1914) looked at the distribution of response opportunities among ability groups ranked by the teacher and found that students in the top fourth of the class did about 40% more reciting than those in the bottom fourth and that the disparity increased with grade level.

Differing teacher expectations and their influence on the amount of time children are given to respond have been researched by Rowe (1972). She found that the pace of instruction in elementary science classrooms was very fast with teachers waiting on the average only one second for a child to begin a response before repeating the question

or calling on another student to respond. After a response, teachers waited an average of 0.9 seconds before commenting on the response, asking another question, or moving to a new topic. Of particular interest was her finding that when the "wait-time" was considered in conjunction with teacher ratings of their best and worst students, the top group received nearly two seconds to answer while the bottom group received less than one second. She also found the use of protracted "wait-time" seemed to influence students' sense of fate control--the belief that events that happen to an individual are in some measure under that person's control. When the "wait-time" between questions and response was increased, Rowe (1972) found the following student outcomes:

1. The length of student responses increased.
2. The number of unsolicited but appropriate student responses increased.
3. Failure to respond decreased.
4. Confidence as reflected in fewer inflected responses increased.
5. The incidence of speculative thinking increased.
6. Teacher-centered show and tell decreased and student-student comparing increased.
7. More evidence followed by or proceeded by inference statement occurred.
8. The number of questions asked by children increased and the number of experiments they proposed increased.
9. "Slow" student contributions increased. (pp. 6-7)

Brophy and Good (1969) used the term "latency" for what Rowe called "wait-time." They suggested that long latencies communicated confidence in the child and a willingness to wait for the response.

Several studies were found that dealt with the issue of differential treatment for lower class and minority students. The teaching behaviors used with these children were those typically used with low-expectation students. Mercer (1971) studied the desegregation process in Riverside, California, and concluded that minority students had much more status anxiety than majority students and were more easily crushed by not being called upon or not being recognized. A report by the U.S. Commission on Civil Rights (1973) showed that minority (in this case Mexican-American) students experienced more interactions with the teacher than majority students in only two areas: giving directions and criticizing. In all positive categories, the majority students experienced more interactions. Yee (1969) found the social class of students to be a determinant of the treatment accorded them by teachers. He found great and consistent differences between the treatment of middle-class children and lower-class children. Middle-class children had warm, trustful, and sympathetic interactions with their teachers, while lower-class children experienced cold, blaming, and punitive teacher interactions. Lesniak, Lohman, and Churukian (1972) compared the verbal behavior of 45 suburban and 45 inner-city teachers and found that the inner-city teacher gave more directions and criticized students more; they asked fewer questions and accepted or clarified students' ideas less.

Asbury (1982) called attention to the effect of expectations on the academic achievement of black students and cited "black expectancy" as a variable for research in order to determine "the factors and events that determine the nature and scope of black peoples' expectations of and for themselves as productive members of society" (p. 369). He suggested the need for educators to acquire evidence to guide appropriate action to deal with issues such as (a) "why black children take for granted they can learn to dance, sing, and play sports but can't be good at arithmetic" (p. 370) or (b) "the effect of the 'self-fulfilling prophecy' which suggests that black children cannot do well in academic subjects in school" (p. 371).

Howard and Hammond (1985) urged blacks to have "a more aggressive and confident approach to intellectual competition" (p. 21). They offered the following hypothesis regarding the issue of black intellectual performance and lack of participation in intellectual competition:

> (1) Black performance problems are caused in large part by a tendency to avoid intellectual competition. (2) This tendency is a psychological phenomenon that arises when the larger society projects an image of black intellectual inferiority and when that image is internalized by black people. (3) Imputing intellectual inferiority to genetic causes, especially in the face of data confirming poorer performance, intensifies the fear and doubts that surround this issue. (p. 19)

They stressed the powerful impact of expectations on performance and the need for authority figures such as parents and teachers to control

"the way we talk to one another; the messages we give and the expectations we set" (p. 21).

Gilbert and Gay (1985) suggested that "the key to improving success in schools for poor black students is modifying the means used to achieve learning outcomes, not changing the outcomes themselves" (p. 133). They urged that high academic standards and expectations be set for black students and that attention be given to the differences between the school culture and the urban black culture.

> The collision of the school culture and the black culture on the procedures that surround teaching and learning can have devastating effects on both teachers' and students' academic efforts and achievements. . . . Teachers form opinions about the academic abilities of black students based on problems these students have with the procedures of teaching and learning. A self-fulfilling prophecy is set in motion, as teachers expect black students to fail regardless of their actual academic potential and so adjust their own behavior in ways that help realize these expectations. (p. 136)

They also pointed out the need for educators to make the teaching of basic skills more effective and meaningful in the daily lives of black children.

Two reports offered evidence which might influence educators to raise their expectations for the academic performance of black students. The first done by the Educational Testing Service (Mann, 1984) stressed that the test scores of minority students had been improving where the right environment had been provided.

> The most ignored fact in many of the reform reports is that the academic performance of minority students is improving. The upswing in their test scores offers solid

> evidence that improving the educational opportunities of minority students brings about improved educational results. Serious inequalities are still too common in American schools, and educational deficiencies are still reflected in the academic performance of the minority students who are victims of these inequalities. But improvement in test scores of minority students offers encouraging evidence that positive action on behalf of equal educational opportunity indeed does result in improved student performance. (p. 1)

A somewhat similar report was done by Peterson and Strasler (1986) for the South Carolina Governor's Office. It looked at the impact on minority students of recent educational reforms in that state and found marked improvement in black students moving above the 75th percentile though their progress was not quite as substantial as for students who started below the 25th percentile (p. 26).

Reviewing studies which pointed out the differential treatment given students according to the teacher's expectations for them suggested a loop (see Figure 1) which could have a significant bearing on the performance of high achieving minority students. This seemed important given the evidence that the lower class and minority students have in the past not been likely to have the benefits of a nurturing classroom environment.

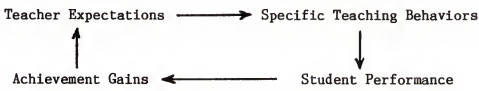

Figure 1. Relationships between teacher expectations and student achievement.

Reasonably high expectations by teachers for the performance of their students can be communicated by the presence or absence of specific teaching behaviors. These teacher behaviors influence improved classroom performance by students which results in achievement gains which will in turn lead to an increase in teacher expectations.

Summary

The purpose of this study was to determine relationships between the use of selected teaching behaviors by teachers of academically talented black students and the academic achievement of those students. The following conclusions were made as a result of this review.

1. Teacher behaviors associated with cognitive gains for students as measured by standardized achievement tests have been identified as a result of the major reviews of the process-product research (Brophy & Good, 1986; Medley, 1977; Rosenshine, 1976; Soar & Soar, 1979).
2. Clusters of these behaviors comprise teacher competencies. Medley's (1977) 13 statements drawn from the 289 relationships from 14 studies which met his stringent criteria for inclusion in his review seemed to be the best source of competencies for this study.
3. The presence or absence of selected teacher behaviors can be determined through the use of a low-inference observations instrument keyed for each of the competencies of interest in this study.

4. The statements about teacher competencies come from research done largely with low socioeconomic status students in the primary grades learning basic skills. The review of the literature revealed the need to further delineate student variables in a process-product study to confirm if these competencies can be generalized to high socioeconomic status/high achieving black students and low socioeconomic status/high achieving black students in the sixth grade and above.
5. Studies concerning the teacher presage variable (Dunkin & Biddle, 1974) of teachers' expectations for their students provided insights about the use of specific teacher behaviors which subtly yet powerfully affect student achievement and which are incorporated in the 18 teaching behaviors selected for this study. There was considerable support for increasing the use by teachers of behaviors which send positive expectancy messages in order to impact the achievement of minority students of interest in this study. Reports by the Educational Testing Service (Mann, 1984) and the South Carolina Governor's Office (Peterson & Strasler, 1986) provided strong evidence from a variety of sources which could be used to influence teachers to raise their expectations for the academic achievement of their black students.

CHAPTER III
THE DESIGN OF THE STUDY

The problem in this study was to determine relationships between the use of selected teaching behaviors by teachers of academically talented black students and the academic achievement of those students. The investigation of the relationships included an analysis of the influence of the effects of the differences between schools and the differences within schools upon the relationships.

Hypothesis

There will be no significant relationships between the use of selected individual teaching behaviors by the teachers and the achievement of their academically talented black students (a) at the school level, (b) at the teacher level when both between and within school effects are allowed to have influence, or (c) at the teacher level when school-level effects are eliminated. In the analysis of the data, significance at the .10 level was used as a minimum for rejection of the null hypothesis.

Study Design

This was a correlational study designed to investigate the possibility of significant correlations between the use of selected teaching behaviors and cognitive achievement gains for students.

Product moment correlation coefficients were obtained to test the hypothesis about the relationships between residual gain scores for high achieving black students and the use of selected teaching behaviors in the classroom as measured by 18 statements from Medley (1977) and Coker and Coker (1982). The data for the teaching behaviors and the correlational analyses were analyzed at the Computer Center at Georgia State University using the Statistical Analysis System (SAS).

The Study Participants

The teacher participants for the study were 79 teachers from six schools--two sixth grade centers, two junior high schools, and two senior high schools—in a large urban school district in northeast Florida. The schools were selected because the staff volunteered to participate in a staff development program entitled "Make A Difference" aimed at increasing the use of selected teaching behaviors by teachers who taught high-achieving black students. All participating schools had a departmentalized organizational structure. All teachers who received training were volunteers, and their level of participation in the training program was high. Of the 79 teachers, 55 (70%) were female and 36 (46%) were black. These numbers exceed the district average for teachers of 58% female and 30% black. Among them, these teachers taught 116 students who had been identified as academically talented by scoring at or above the 85th percentile on

the total reading and total mathematics portions of the Stanford Achievement Test administered in the spring of 1984. Of these students, 17 (14.5% of the total) were considered to be of low socioeconomic status because they qualified for free or reduced lunch. Sixty-nine of these students (58.9% of the total) were female.

During January 1985, the principals of 24 schools in the northwestern quadrant of the district were invited to participate in a staff development program. The schools were selected because a large portion of the black students in the district who scored at or above the 85th percentile in reading or mathematics on the Stanford Achievement Tests administered in April 1984 attended those schools. The training program was designed (a) to increase the teachers' awareness of the influence that differential teacher expectations, teachers' feelings of efficacy, and individual differences in personality type have on student achievement and (b) to increase the teachers' use of selected effective teaching behaviors through the use of a training procedure which included providing cognitive knowledge of the behaviors, modeling the desired behaviors in training sessions, cueing to the behaviors by the use of a low-inference observation instrument, and practice and feedback sessions in the classroom with a peer partner. The teaching behaviors were selected because they were thought to be associated with achievement gains for high achieving students.

Principals and two lead teachers from each school received nine hours of training during the week of January 25, 1985. The nine hours included one hour on teacher expectations, one hour on individual differences in personality type as revealed by the Myers-Briggs Type Indicator, one-half hour on classroom climate, and six and one-half hours on providing knowledge of the effective teaching behaviors, modeling the behaviors, teaching how to code the behaviors on a low-inference observation form, and structuring the peer observations. By April 4, 1985, the principals and lead teachers had in turn delivered the nine hours of training to the teachers in their schools. Following the training sessions, teachers chose peer partners and observed in each others' classrooms and provided feedback following the observation on seven different occasions. This series of peer observations was completed by May 3, 1985.

Instrumentation

A modified version of the COKER (Classroom Observations Keyed for Effectiveness Research) was compiled with the assistance of the senior developer. It was used for the "Make A Difference" staff development program and for this study. The Modified COKER has two sections. The first is for recording teacher-student interactions. It consists of 18 teacher behaviors and 10 student behaviors. The teacher behaviors are broken into five categories: presenting, questioning, responding, personal regard, and providing equal response opportunities. The

student behaviors are divided into four categories: attending to the teacher, responding to questions, initiating questions or comments, and off-task behaviors. The second section is a list of 47 teacher behaviors in three categories: methodology, affect, and control.

The Modified COKER classroom observation instrument was scored on 18 teaching competencies chosen from the Medley (1977) review and the work of Coker and Coker (1982). These teaching behaviors, which have been associated with achievement gains for high achieving students, were selected to match the objectives of the staff development program "Make A Difference." These teaching behaviors were evaluated by clusters of related items which comprise the scoring keys for the Modified COKER. The scoring keys used were ones that had previously been developed to measure these 18 teaching behaviors; they were not developed for this study. The description of these behaviors follow:

1. Encourages student-initiated verbal interaction. A cluster of 22 items (presence of cells 77, 87, 97, 127, 137, 177, 187, 197, 227, 325; absence of cell 324) on the Modified COKER measures this teaching behavior (see Appendix A). Examples of the items are voluntary comments from the students when the teacher is in a questioning or responding mode.
2. Amplifies and discusses student responses. A cluster of 11 items (presence of cells 103, 104, 105, 107, 114, 115,

117, 183, 184, 185) on the Modified COKER measures this teaching behavior (see Appendix A). Examples of the items include teacher questions which require the students to elaborate on their own or another student's ideas and substantive questions or comments posed by the students.

3. Requires that students are involved (time on task). A cluster of 22 items (presence of cells 42, 44, 45, 73, 74, 75, 84, 85, 93, 94, 95, 105, 115, 123, 124, 125, 173, 174, 175, 193, 194, 195) on the Modified COKER measures this teaching behavior (see Appendix A). Examples of the items include students actively listening to an explanation by the teacher, students responding to questions from the teacher, and students asking substantive questions.
4. Prepares and/or uses various methods and techniques to present subject matter and encourage student participation. A cluster of 10 items (presence of cells 64, 127, 128, 129, 130, 131, 136, 228, 232, 233) on the Modified COKER measures this teaching behavior (see Appendix A). Examples of the items include general and specific praise by the teacher and using pauses and prompts to increase student responses.
5. Promotes positive self-image in students. A cluster of 12 items (presence of cells 133, 224, 229; absence of cells

47, 48, 61, 71, 72, 95, 96, 119, 120) on the Modified COKER measures this teaching behavior (see Appendix A). Examples of the items include the use of prompts to help a student answer correctly and stay on task.

6. Is consistent and empathetic in the treatment of students. A cluster of 9 items (presence of cells 42, 66, 88, 90, 112, 114, 135, 191; absence of cell 193) on the Modified COKER measures this teaching behavior (see Appendix A). Examples of the items include the teacher using students' ideas and using questions to keep students on task.

7. Practices good human relations. A cluster of 8 items (presence of cells 127, 130, 131, 225, 226, 231; absence of cells 239, 240) on the Modified COKER measures this teaching behavior (see Appendix A). Examples of the items include the teacher using pauses and prompts to help the students be successful, giving praise, and refraining from harsh, rebuking behavior.

8. Exhibits overall positive approach. A cluster of 9 items (presence of cells 765, 79, 85, 100, 103, 109, 124, 125, 225) on the Modified COKER measures this teaching behavior (see Appendix A). Examples of the items include allowing students to raise questions, asking students to

elaborate on other students' ideas, and using active listening to clarify responses.

9. Stimulates group discussion and individual participation. A cluster of 18 items (presence of cells 42, 127, 128, 129, 130, 131, 132, 139, 140, 210, 217, 233; absence of cells 182, 183, 184, 185, 186, 227) on the Modified COKER measures this teaching behavior (see Appendix A). Examples of the items include the students actively participating as the teacher directs them to respond, the use of praise and individual attention to keep students involved, and the teacher asking probing questions to help the students respond appropriately.
10. Nurtures creativity and discovery. A cluster of 9 items (presence of cells 69, 78, 87, 105, 118, 119, 120, 121, 122) on the Modified COKER measures this teaching behavior (see Appendix A). Examples of the items include using questions and pauses which encourage students to think further about their own responses and those of their classmates and using students' ideas as a bridge to further exploration.
11. Helps learner to develop positive attitude toward self. A cluster of 20 items (presence of cells 84, 100, 101, 102, 229; absence of cells 200, 201, 202, 222, 224, 225, 226,

227, 228, 236, 238, 239) on the Modified COKER measures this teaching behavior (see Appendix A). Examples of the items include the teacher ascertaining a student's progress, using praise and active listening to keep students on task, and not using harsh, rebuking behaviors to maintain classroom control.

12. Seeks, accepts, and uses student ideas as part of teaching procedures. A cluster of 8 items (presence of cells 65, 66, 74, 75, 83, 132, 229; absence of cell 234) on the Modified COKER measures this teaching behavior (see Appendix A). Examples of the items include the teacher encouraging students to ask questions and make comments and to elaborate on their own ideas and those of their classmates.

13. Motivates students to ask questions. A cluster of 6 items (presence of cells 65, 66, 75, 85, 135, 325) on the Modified COKER measures this teaching behavior (see Appendix A). Examples of the items include the teacher encouraging the students to ask substantive or procedural questions while the teacher is in either a questioning or responding mode.

14. Uses questions that lead students to analyze, synthesize, and think critically. A cluster of 8 items (presence of cells 105, 115, 125, 327, 329, 338; absence of cells 324,

326) on the Modified COKER measures this teaching behavior (see Appendix A). Examples of the items include the teacher asking perplexing questions and encouraging students to ask questions in response to their own ideas and the ideas of their classmates.

15. Accepts varied student viewpoints and/or asks students to extend or elaborate answers or ideas. A cluster of 25 items (presence of cells 71, 72, 73, 74, 75, 101, 102, 103, 104, 105, 107, 111, 112, 113, 114, 115, 117, 127, 175, 177, 182, 183, 184, 185, 187) on the Modified COKER measures this teaching behavior (see Appendix A). Examples of the items include the teacher encouraging students to elaborate on their own ideas and the ideas of their classmates, practicing active listening and checking his or her own understanding of the students' responses, and using the ideas of students as a transition to the next lesson topic.
16. Demonstrates proper listening skills. A cluster of 4 items (presence of cells 232, 235, 236, 237) on the Modified COKER measures this teaching behavior (see Appendix A). Examples of the items include the teacher paying attention to the students.
17. Provides feedback to learners on their cognitive performance. A cluster of 13 items (presence of cells 133, 124, 135, 155,

171, 172, 173, 174, 191, 192, 193, 194, 195, 197) on the Modified COKER measures this teaching behavior (see Appendix A). Examples of the items include the teacher using cues to help students respond correctly, moving about the room to monitor the students' seatwork to provide assistance and prevent confusion, and encouraging students to ask questions.

18. Uses positive reinforcement patterns with students. A cluster of 2 items (presence of cell 329; absence of cell 328) on the Modified COKER measures this teaching behavior (see Appendix A). Examples of the items include the teacher correcting any misinformation given by the students or the teacher and not accepting incorrect information from the students or other sources.

Data Collection

Data were collected on the teachers' use of selected teaching behaviors in the classroom and on the academic achievement of academically talented black students. Data collection methods for these two areas are described in the following sections.

Teacher Behaviors Data

The observers trained in the use of the Modified COKER were either the school principal or a designee. These school-based personnel were trained to use the Modified COKER during the week of January 25, 1985. Interrater reliabilities of at least .80 were

required for successful completion of the training program. Between February 4 and February 11, 1985, the observers collected data using the Modified COKER for each participating classroom teacher in order to collect baseline data about the use of selected teaching behaviors prior to the "Make A Difference" training. Each classroom teacher was observed by an observer during a classroom visit. During the visit the observer recorded two 10-minute observations. Thus, each teacher was observed for two periods for a total of 20 minutes. According to the senior developer of the COKER instrument, this amount of observation would yield reliabilities of .40 to .50 that an accurate picture of the teacher's prevailing instructional practices was being obtained, 45 minutes of observation would yield reliabilities of .60 and .70, and 60 minutes of .70 to .80 (H. Coker, personal communication, January 9, 1984).

The completed observational records were scored at Georgia State University using the 18 scoring keys derived from the work concerning effective teaching behaviors of Medley (1977) and Coker and Coker (1982). The data from the observation score sheets were combined to yield a score for each teacher on each of the 18 selected behaviors so that a set of results from each teacher was obtained. These results compared the teachers' performances on each of the 18 behaviors with a norm established for the teachers in the sample. The scoring program converted the teachers' score on each of the 18 statements into a standard score with a mean of 50 and a standard deviation of 10.

Student Achievement Data

For at least the past 20 years, reading and mathematics achievement have been assessed using the Stanford Achievement Tests for each grade level each year in the regular evaluation program in the district which was the setting for this study. The Stanford Achievement Tests were administered during the weeks of April 9, 1984, and April 15, 1985. All test results were stored in the district's computer records. Scale scores for total reading and total mathematics were obtained for the 116 students in the study from the spring of 1984 and the spring of 1985 so that student achievement gains could be assessed.

Data Analysis

Residual student achievement scores were obtained for the data analyses. The residual score represents the difference between the observed and predicted posttest score for each student when predicted posttest scores were obtained from the usual regression equation $Y = a + bX$, where "Y " stands for the predicted posttest of any student whose pretest score is "X" and "a" is the intercept and "b" is the regression coefficient. This was done to adjust out differences in pretest scores and to counter any regression effect. The residual, the difference between the posttest and predicted posttest score, was used as the measure of gain. Data were reduced for the analyses in three ways. For some correlations the mean residual scores for each

teacher were used; for others, the mean residuals for each school were used. This was done in order to identify school and teacher effects and their influence on the relationships between the use of the teaching behaviors and student achievement.

The relationships between the teachers' behavior scores and students' mean residual achievement scores were analyzed by means of product moment correlations. Analyses were made to determine three sets of correlations among the 18 teacher behaviors and the two student achievement outcome measures. The first was by school. It related the students' mathematics scores and reading scores as school means, with the teacher behavior scores expressed as school means for each of the 18 teacher behaviors. This procedure reflected the effect of differences between schools. The second was by classroom within schools. It related classroom mean student mathematics residual scores and reading residual scores expressed as deviations from school means, with the teachers' teaching behaviors also expressed as residuals from school means. This allowed the data to be treated as if all students and teachers were in the same school and thus eliminated the between school variance (D. M. Medley, personal communication, October 2, 1986). The third was by teacher. It correlated the students' mathematics residual scores and reading residual scores as determined by means for each teacher with the average teacher behavior scores for each of the 18 teacher behaviors

ignoring schools. The three analyses identified school effects (differences between schools), within school effects (differences within schools, eliminating school-level effects), and an analysis at the level of individual teachers, permitting both within and between school effects to have influence. Although the last of these is least clear in meaning, it follows the procedure which has most often been used in other studies, and is reported for comparison.

The results of the data analyses are reported in Chapter IV. Chapter V contains a discussion of the results and implications of the study and includes recommendations for further research.

CHAPTER IV
RESULTS OF THE STUDY

The purpose of this study was to determine relationships between the use of selected individual teaching behaviors by teachers of academically talented black students and the academic achievement of those students. The investigation of the relationships included an analysis of the influence of the effects of the differences between schools and the differences within schools upon the relationships.

The following hypothesis stated in the null form was tested: There will be no significant relationships between the use of selected individual teaching behaviors by the teachers and the achievement of their academically talented black students (a) at the school level, (b) at the teacher level when both between and within school effects are allowed to have influence, or (c) at the teacher level when school-effects are eliminated.

The participants in this study were 79 teachers in six schools in a large urban district in northeast Florida and the 116 academically talented black students they taught. Data were collected on the teachers' use of selected teaching behaviors in the classroom and on the academic achievement of academically talented black students. Classroom observations using the Modified COKER (Classroom

Observations Keyed for Effectiveness Research) were conducted to collect the data on the incidence of the teaching behaviors. Academic achievement data for the students were collected from the school district's computer records for the total mathematics and total reading portions of the Stanford Achievement Test administered in April 1984 and April 1985.

The records of the classroom observations were scored and analyzed at the Computer Center at Georgia State University. The correlational analyses were done with the Statistical Analysis System (SAS). Three sets of product moment correlations were obtained to determine the relationships between the teaching behavior scores of teachers and the achievement scores of students. The first set, done at the school level, identified significant relationships and the influence of school effects on those relationships. The second set was done at the teacher level and both within school and between school effects were permitted to have influence upon the relationships. The third set, also done at the teacher level, identified significant relationships and the influence of within school effects on those relationships. In determining the correlations, residual scores for teacher behaviors and for classroom mean student achievement were obtained. The residuals for teachers taken from school means were used to counter the effects of the different schools. The student residuals taken the same way were used to counter the effects of differences between schools. They were also

used to combat the effect of regression toward the mean which was of particular concern in a study involving students identified by high scores on a pretest. School means for both sets of measures were used to examine relationships between schools.

The results of the study are presented in the following way. In order to test the major hypothesis, three sets of correlations among the 18 teacher behaviors and 2 student achievement outcome measures were determined. There were 108 comparisons (18 teacher behaviors compared with two measures of student achievement for three types of effects) in the three sets of correlations. The relationships which were statistically significant are noted. In the analysis of the data, the .10 level of significance was used as a minimum for determining statistical significance.

Relationships Between Teaching Behaviors and Student Outcomes

In the first set of analyses, the relationships between the teachers' behavior scores and students' mean residual scores by schools were analyzed to determine product moment correlations. The results are shown in Table 1.

Since there were only six schools in the comparison (n=6), the correlations had to be very high in order to be significant. Nevertheless, at the school level there were statistically significant ($p < .10$) relationships between 2 of the 18 teaching behaviors and mathematics achievement as measured by the total mathematics portion

Table 1

School Level Correlations of Selected Individual Teacher Behaviors and Student Achievement Outcomes in Mathematics and Reading (n=6)

Teacher Behavior	Correlation Mathematics	Reading
1. Encourages student-initiated verbal interaction.	-.3702[a]	-.1206
2. Amplifies and discusses student responses.	-.0149	-.6216
3. Requires that students are involved (time on task).	-.2840	-.6336
4. Prepares and/or uses various methods and techniques to present subject matter and encourages student participation.	-.6221	-.3851
5. Promotes positive self-image in students.	.6241	.2098
6. Is consistent and empathetic in the treatment of students.	-.6381	-.8467**
7. Practices good human relations.	-.1768	-.6678
8. Exhibits overall positive approach.	-.3979	-.8322**
9. Stimulates group discussions and individual participation.	-.1153	-.2050
10. Nurtures creativity and discovery.	-.7607*	-.0393
11. Helps learner develop positive attitude toward self.	.3875	.5151
12. Seeks, accepts, and uses student ideas as part of teaching procedures.	-.4339	-.6442
13. Motivates students to ask questions.	-.8011*	-.2243
14. Uses questions that lead students to analyze, synthesize, and think critically.	.6252	-.4662
15. Accepts varied student viewpoints and/or asks students to extend or elaborate answers or ideas.	-.0801	-.6814
16. Demonstrates proper listening skills.	-.3969	-.2032
17. Provides feedback to learners on their cognitive performance.	.1687	-.4906
18. Uses positive reinforcement patterns with students.	-.2944	.3213

*p < .10 **p < .05[b]

[a]The standard error of the correlation is .45.

[b]With 4 degrees of freedom, a correlation must be at least .729 in order to be statistically significant at the .10 level, at least .811 to be statistically significant at the .05 level, and at least .917 to be statistically significant at the .01 level.

of the Stanford Achievement Test. These were both negative correlations meaning that "nurturing creativity and discovery" and "motivating students to ask questions" are behaviors associated with lower gains in mathematics for academically talented black students. That is, schools in which these behaviors were more frequent, on average, were schools in which students gained less, on average. Also, there were statistically significant relationships between 2 of the 18 ($p < .05$) selected teaching behaviors and reading achievement as measured by the total reading portion of the Stanford Achievement Test. Again, these were both negative correlations meaning that two behaviors related to classroom climate ("is consistent and empathetic in the treatment of students" and "exhibits an overall positive approach") were associated with lower gains in reading for academically talented black students. The null hypothesis was rejected in these instances.

Next, correlations were determined which related the students' mathematics residual scores and reading residual scores expressed as deviations from school means, with the teaching behavior residuals for the teachers as determined by school means. This allowed the data to be treated, and the results interpreted, as if all the teachers and students were in the same school and thus eliminated the between school variance (D. M. Medley, personal communication, October 2, 1986). The results are reported in Table 2.

Table 2

Teacher Level Correlations of Selected Individual Teacher Behaviors and Student Achievement Outcomes with School Effects Removed (n=79)

Teacher Behavior	Correlation Mathematics	Reading
1. Encourages student-initiated verbal interaction.	-.0933[a]	-.0647
2. Amplifies and discusses student responses.	-.0294	-.1317
3. Requires that students are involved (time on task).	-.1005	-.1370
4. Prepares and/or uses various methods and techniques to present subject matter and encourages student participation.	.0114	-.0649
5. Promotes positive self-image in students.	-.0107	-.0102
6. Is consistent and empathetic in the treatment of students.	.0810	.1306
7. Practices good human relations	-.1240	-.0869
8. Exhibits overall positive approach.	-.0758	-.1266
9. Stimulates group discussions and individual participation.	-.0574	-.0046
10. Nurtures creativity and discovery.	-.0104	-.2006*
11. Helps learner develop positive attitude toward self.	-.0205	.0528
12. Seeks, accepts, and uses student ideas as part of teaching procedures.	-.1811	-.1343
13. Motivates students to ask questions.	-.1299	-.0292
14. Uses questions that lead students to analyze, synthesize, and think critically.	-.1752	-.2393**
15. Accepts varied student viewpoints and/or asks students to extend or elaborate answers or ideas.	-.0539	-.1936*
16. Demonstrates proper listening skills.	-.0034	-.0320
17. Provides feedback to learners on their cognitive performance.	-.0143	.0469
18. Uses positive reinforcement patterns with students.	-.1545	-.1340

*p < .10 **p < .05[b]

[a]The standard error of the correlation is .11.

[b]With 72 degrees of freedom, a correlation must be at least .192 in order to be statistically significant at the .10 level, at least .229 to be statistically significant at the .05 level, and at least .298 to be statistically significant at the .01 level.

At the teacher level when within school differences were eliminated, there were no significant relationships for mathematics. However, there were statistically significant relationships ($p < .10$ for two, $p < .05$ for one) between 3 of the 18 teaching behaviors and reading achievement as measured by the total reading portion of the Stanford Achievement Test. These were all negative correlations meaning that "nurtures creativity and discovery," "uses questions that lead students to analyze, synthesize, and think critically," and "accepts varied student viewpoints and/or asks students to extend or elaborate on student answers or ideas" are behaviors associated with a lower achievement gain in reading for academically talented black students. The null hypothesis was rejected in these instances.

Finally, the correlations between the behavior scores of teachers and the mean residual scores of students by teacher were determined. In this case, both between school and within school variance is reflected in the correlations. Although these correlations are less clear in meaning, this is the way these analyses have traditionally been carried out (R. S. Soar, personal communication, December 4, 1986). Therefore, they are reported here to permit comparison. The results are shown in Table 3.

At the teacher level there were statistically significant relationships between 2 of the 18 teaching behaviors in mathematics. Again, these were negative correlations meaning that "seeks, accepts,

Table 3

Teacher Level Correlations of Selected Individual Teacher Behaviors and Student Achievement Outcomes in Mathematics and Reading (n=79)

Teacher Behaviors	Correlations	
	Mathematics	Reading
1. Encourages student-initiated verbal interaction.	-.1285[a]	-.1033
2. Amplifies and discusses student responses.	-.0831	-.2545**
3. Requires that students are involved (time on task).	-.1778	-.2617**
4. Prepares and/or uses various methods and techniques to present subject matter and encourages student participation.	-.0812	-.1069
5. Promotes positive self-image in students.	.0824	.0465
6. Is consistent and empathetic in the treatment of students.	-.0603	-.0405
7. Practices good human relations.	-.1754	-.1902*
8. Exhibits overall positive approach.	-.1860	-.2768**
9. Stimulates group discussions and individual participation.	-.0637	.0115
10. Nurturas creativity and discovery.	-.0952	-.1804
11. Helps learner develop positive attitude toward self.	.0791	.1426
12. Seeks, accepts, and uses student ideas as part of teaching procedures.	-.2380**	-.2223*
13. Motivates students to ask questions.	-.1873*	-.0670
14. Uses questions that lead students to analyze, synthesize, and think critically.	-.1301	-.2996***
15. Accepts varied student viewpoints and/or asks students to extend or elaborate answers or ideas.	-.1130	-.3157***
16. Demonstrates proper listening skills.	-.0608	-.0467
17. Provides feedback to learners on their cognitive performance.	-.0267	-.0647
18. Uses positive reinforcement patterns with students.	-.1466	-.0578

*p < .10 **p < .05 ***p < .01[b]

[a]The standard error of the correlation is .11.

[b]With 77 degrees of freedom, a correlation must be at least .187 in order to be statistically significant at the .10 level, at least .222 to be statistically significant at the .05 level, and at least .289 to be statistically significant at the .01 level.

and uses student ideas as part of teaching procedures" and "motivates students to ask questions" are behaviors associated with lower achievement gains in mathematics. Furthermore, there were statistically significant relationships between 7 of the 18 teacher behaviors and students' reading achievement as measured by the total reading portion of the Stanford Achievement Test. These were all negative meaning that "amplifies and discusses student response," "requires that students are involved (time on task)," "practices good human relations," "exhibits overall positive response," "seeks, accepts, and uses student ideas as part of teaching procedures," "uses questions that lead students to analyze, synthesize, and think critically," and "accepts varied student viewpoints and/or asks students to extend or elaborate answers or ideas" are behaviors associated with lower achievement gains in reading for academically talented black students. The null hypothesis was rejected in these instances.

Summary of Results for Correlations of Individual Teacher Behaviors and Student Achievement Outcome Measures

Table 4 presents the relationships which were found to be statistically significant in each of the three comparisons of teacher behaviors and student achievement outcomes in both mathematics and reading. In each case, the relationship was a negative one indicating that use of the teaching behavior was associated with decreased achievement gains.

Table 4

Significant Relationships Between Teacher Behaviors and Student Achievement Outcomes for Academically Talented Black Students

Teacher Behavior Number	SAT Mathematics Sch Level n = 6	SAT Mathematics Tchr Level n = 79	SAT Mathematics Tchr Level # n = 79	SAT Reading Sch Level n = 6	SAT Reading Tchr Level n = 79	SAT Reading Tchr Level # n = 79
2					-.2545**	
3					-.2617**	
6				-.8467**		
7					-.1902*	
8				-.8322**	-.2768**	
10	-.7607*					-.2006*
12		-.2380**			-.2223*	
13	-.8011*	-.1873*				
14					-.2896***	-.2393**
15					-.3187***	-.1936*

with school level effects removed

*p < .10 **p < .05 ***p < .01

Of the 18 teacher behaviors, 10 behaviors taken from the "Make A Difference" model were found to be negatively correlated with student achievement. Four of the teacher behaviors were found to have a significant relationship with reading achievement for two of the three comparisons. Two of these (i.e., Teacher Behavior 14, uses questions that lead students to analyze, synthesize, and think critically, and Teacher Behavior 15, accepts varied student viewpoints and/or asks students to extent or elaborate answers or ideas) were significant at the .01 level for the teacher level comparisons. One of the teacher behaviors (Teacher Behavior 13, motivates students to ask questions) was found to have a significant relationship with mathematics for two of the three comparisons. Two behaviors (Teacher Behavior 10, nurtures creativity and discovery, and Teacher Behavior 12, seeks, accepts, and uses student ideas as part of teaching procedures) were found to have a significant relationship with both mathematics and reading for one of the comparisons. Four other teacher behaviors were found to have a significant relationship with reading achievement for one of the three comparisons. These four behaviors are Teacher Behavior 2, amplifies and discusses student responses; Teacher Behavior 3, requires that students are involved (time on task); Teacher Behavior 6, is consistent and empathetic in the treatment of students; and Teacher Behavior 7, practices good human relations. For the remaining 8 of the 18 teacher behaviors from the "Make A

Difference" model there were no significant relationships between the teachers' use of the behaviors and the students' achievement on the Stanford Achievement Test.

The results of this correlational study have been presented showing the relationships which were found to exist between the use by teachers of selected individual teaching behaviors from the "Make A Difference" staff development model and achievement outcomes for academically talented black students as measured by the total mathematics and total reading portions of the Stanford Achievement Test. Three sets of correlations between the 18 teaching behaviors and two student achievement measures were determined. Of the 18 teacher behaviors, 10 were found to be significantly related to student achievement. In each case, the relationship was a negative one indicating that the use of the behavior was associated with lower achievement gains. There were no significant relationships between the use by teachers of the remaining eight behaviors from the "Make A Difference" model and student achievement outcomes. It should be noted that the teacher level results (columns 2 and 5) are not independent of the other behavior measures because they include the effects of both the between school and within school analyses. However, for the other two comparisons, four correlations were significant at the .10 level of confidence from a total of 36; at the .05 level, three of 36 were significant.

CHAPTER V
SUMMARY, DISCUSSION, AND CONCLUSIONS

Summary

The educational excellence movement recently focused attention upon the academic achievement of American students. As a result, educators began to scrutinize programs of education and their consequent effect upon students' academic achievement in order to identify those elements of education most likely to promote student academic gains. In addition, while student achievement data revealed a gap between the academic performance of black students and white students, the literature contained reports of improved performance of minority students in cases where improving educational opportunities were provided. Therefore, it seemed relevant to identify those elements of instruction most likely to promote academic achievement of black students. It seemed particularly relevant to focus upon the instructional process, to develop inservice training programs to improve the quality of instruction, and to investigate the relationships of teaching behaviors to student achievement.

The process-product studies of the 1970s were a likely source of information for the design of inservice training programs. The literature review revealed generalizations about teaching behaviors

associated with achievement outcomes for students distinguished by certain attribute variables, primarily by lower grade level designations and lower socioeconomic status. The generalizability of these findings to students distinguished by being in grade six and above, having a minority racial status, and showing high academic achievement had not been investigated. Research was lacking on the correlations between the achievement of black students and the use by teachers of behaviors deemed appropriate by the product-process research. Furthermore, the review of literature showed that the academic performance of minority students was rising in instances where improving educational opportunities were offered. Therefore, it seemed probable that the gap between the performance of white and black students could be reduced when a quality program of instruction was delivered in a nurturing atmosphere. A staff development program, "Make A Difference," was developed with the goal of improving the academic performance of academically talented black students. The core component of the program was the use of 18 teaching behaviors chosen primarily because of their association with the development of higher level thinking skills or a nurturing classroom environment. It was thought that the use of the behaviors would, in turn, promote student achievement gains.

The purpose of this study, then, was to determine relationships between the use of selected teaching behaviors by teachers of academically talented black students and the academic achievement of

those students. The investigation of the relationships included an analysis of the influence of the effects of the differences between schools and differences within schools upon the relationships.

This was a correlational study designed to investigate the possibility of significant relationships between the use of selected individual teaching behaviors and cognitive achievement gains by academically talented black students. Product moment correlations were calculated to test the hypothesis about the relationships between residual gain scores for high achieving black students and the use of selected individual teaching behaviors in the classroom as measured by 18 scoring keys from Medley (1977) and Coker and Coker (1982). The correlations were calculated to determine if there were significant relationships (a) at the school level, (b) at the teacher level when both between and within school effects were allowed to have influence, and (c) at the teacher level when school-level effects were eliminated. The data for the teaching behaviors were scored and analyzed at the Computer Center at Georgia State University. The correlational analyses were done with the Statistical Analysis System (SAS).

The results of the correlational analyses showed 16 statistically significant ($p < .10$ for seven comparisons, $p < .05$ for seven, and $p < .01$ for two) correlations to exist between the use by teachers of selected individual teaching behaviors from the "Make A Difference" staff development model and achievement outcomes for academically

talented black students as measured by the total mathematics and total reading portions of the Stanford Achievement Test. Over the three sets of correlations, 10 of the 18 teacher behaviors were found to be significantly related to student achievement. In each case the relationship was a negative one indicating that the use of the behavior was associated with lower achievement gains. There were no significant relationships between the use by teachers of the remaining eight behaviors from the "Make A Difference" model and student achievement outcomes. These findings should be viewed with some caution because the 20 minutes of observation used in this study yielded a relatively low (.40 to .50) reliability that an accurate picture of the teachers' prevailing instructional practices were being obtained.

Discussion

An examination of these findings regarding teaching behaviors associated with achievement outcomes for academically talented black students at the upper elementary and secondary levels shows that they are supportive of the findings of other researchers in studies done at the primary level with lower socioeconomic status students. There were 17 significant relationships between 10 of the 18 teaching behaviors and the two measures of student achievement in the three sets of correlations obtained. The teaching behaviors have been grouped into three categories for discussion purposes. These are questioning and responding behaviors, factors related to affect or climate, and time on task.

Questioning and Responding Behaviors

Six teaching behaviors which concern questioning or responding behaviors (amplifies and discusses student responses; nurtures creativity and discovery; seeks, accepts, and uses student ideas as part of teaching procedures, motivates students to ask questions; uses questions that lead students to analyze, synthesize, and think critically; and accepts varied student viewpoints and/or asks students to extend answers or ideas) were found to have significant negative relationships with student achievement outcomes. Use of these behaviors was related to decreased rather than increased achievement gains. This finding is consistent with several cited in the Rosenshine (1976) review. For example, Stallings and Kaskowitz (1974), studying low socioeconomic status primary level students, found positive significant correlations with achievement for only one type of interaction, i.e., adult commands, requests, and direct questions that had an academic focus. All other types of questions including open-ended questions and direct questions that were not academic in focus yielded consistently negative correlations with achievement. With a similar student sample, Soar (1973) found similar results. Convergent questions, drill, or questions with a single answer usually correlated significantly with achievement; divergent and open-ended questions were never positively related to achievement (Rosenshine, 1976, p. 355). Another finding of Stallings and Kaskowitz (1974) reported by Rosenshine which is related to the

findings of this study dealt with the form of student responses. Responses to open-ended questions and nonacademic responses had negative relationships; responses to direct academic questions had significant positive correlations with achievement (Rosenshine, 1976, p. 360).

The six questioning-responding behaviors which this study found to be negatively related to student achievement outcomes in reading and/or mathematics are more inquiry oriented and learner-centered in contrast to a more teacher-centered, structured approach which Rosenshine (1976) called the direct instruction model. The process-product researchers have generally found teaching behaviors from the direct instruction model to be positively related to student achievement gain as measured by standardized achievement tests. For example, Rosenshine made generalizations about the efficacy of direct, academic instruction for fostering reading and mathematics achievement in primary grades with low socioeconomic status students based largely on the previously mentioned studies of Stallings and Kaskowitz and Soar and noted, "none of the indirect activities (for example, arts and crafts, focus on child interests or student and teacher discussion on how time will be used) had a positive relationship to student achievement" (p. 366). He also cited a study by Brophy and Evertson again with low socioeconomic students which showed that "when a student knew the answer, the best response was to ask another question rather than giving detailed feedback and elaboration" (p. 366). These

more learner-centered as opposed to teacher-centered behaviors were labeled by Soar as the "opposite pole" (Rosenshine, 1976, p. 365) of structured learning. In this category Soar included behaviors such as teacher makes pupil the center of attention, teacher encourages students to express themselves freely, and teacher permits students to suggest additional or alternative answers which are similar to those which this study found to be negatively related to student achievement. More recently, reviews by Brophy and Good (1986) and Rosenshine and Stevens (1986) reported studies with findings which were consistent with those of the earlier reviews. However, Brophy and Good (1986) used the term "active teaching" for what Rosenshine called "direct instruction." Rosenshine and Stevens (1986) noted that no single term has yet emerged to describe this type of teaching which they concluded should be used for those content areas "where the objective is to master a body of knowledge or learn a skill that can be taught in a step-by-step manner" (p. 377).

The findings from this study seem to be consistent with conclusions from the Medley (1977) review. His review is of particular interest at this point because not only did he identify those behaviors which characterized effective and ineffective teachers, but he also classified the results of the studies reviewed according to the socioeconomic status of the student. In many instances, he found surprising differences between the effective teaching behaviors for the two types of classes. The data available

from the studies did not always permit such distinctions. In discussing the kinds of questions teachers ask and their ways of responding to students, he noted that the more effective teachers of low socioeconomic students (a) asked more questions at the lower levels of Bloom's taxonomy; (b) asked fewer questions which encouraged students to analyze, synthesize, and evaluate; (c) were less likely to be seen amplifying, discussing, or using student's answers; and (d) were less likely to encourage student-initiated questions or comments (pp. 16-17). The studies available for his review did not permit him to determine the effectiveness of these particular behaviors for high socioeconomic status students. However, the results from this study would suggest that such is the case.

Still another possible explanation for the negative relationships found in this study between the questioning-responding teaching behaviors and student achievement is related to the nature of the outcome measure used. The Stanford Achievement Test contains many more low rather than high cognitive level items. Soar and Soar (1983) considered low and high cognitive level outcomes as context variables which suggested different processes for different outcomes. They concluded that "teacher control of learning activities should vary from closer control for low-cognitive-level achievement to less control for high-cognitive-level achievement, complex problem solving, and noncognitive outcomes" (1983, p. 74). The teaching behaviors which characterized the direct instruction model have been shown to be

positively related to achievement gains as measured by instruments such as the Stanford Achievement Test which have more low rather than high cognitive level items. It is perhaps not surprising that the teaching behaviors from the "Make A Difference" model which are more typical of an inquiry approach and higher level thinking skills were not positively related to the achievement measures used in this study.

Affect or Classroom Climate

Three teaching behaviors which involve affect or classroom climate (is consistent and empathetic in the treatment of students, practices good human relations, and exhibits overall positive approach) were found to have significant negative relationships with student achievement outcomes. Use of these behaviors was related to decreased rather than increased achievement. The explanations for this may again go back to the direct, businesslike approach advocated by Rosenshine (1976) in his direct instruction model. As a result of his review of research, he concluded that time spent on academic activities was positively related to achievement while time spent on students' personal concerns was negatively related (p. 368). Soar and Soar (1983) concluded from their analysis of context variables which affect the teaching-learning process that "positive affect is not related with achievement, but is with problem solving and noncognitive outcomes" (p. 74). Clifton R. Wharton, Jr. (1986), chancellor of the State University of New York system and chairman of The Rockefeller Foundation, in a recent speech to the Urban League suggested, "one of

the most urgent needs for black youth is a broad-based effort to help foster stronger, more competitive, achievement-oriented self-images" (p. 24). He suggested that the key to achievement by black students was families demanding that their children aspire. His suggestion for the benefits of families demanding discipline, hard work, ambition, and self-sacrifice was based on intuition rather than research. The findings from this study which showed three teaching behaviors related to a supportive classroom climate and positive affect were related to decreased achievement gains lend some support to the possibility that a demanding climate in classrooms where the teacher exhibits high expectations which are clear to the students is more productive than a nurturing climate for black students in grades six and above.

Time on Task

The 10th teaching behavior in this study which was negatively correlated with student achievement gains was "requires that students are involved (time on task)." This was a puzzling finding initially because the relationship between academic achievement and the proportion of time students are actively involved in learning has generally been a positive one. However, when the individual cells which comprise the scoring keys for measuring this behavior on the Modified COKER are considered, it is more understandable. The Modified COKER is a matrix for recording the interactions between the teacher and students. Thus, time on task is measured in terms of on task student-teacher interactions. There are 22 items that measure

this behavior. They include students actively listening to an explanation by the teacher, students responding to questions by the teacher, and students asking substantive questions. This is quite different from other process-product studies which have defined time on task in one or more of the following ways: (a) content covered, (b) length of the school day and year, (c) time allocated to academic activities, (d) amount of time students are engaged in academic activities, and (e) students' rate of success with academic tasks (Brophy & Good, 1986, p. 360). The negative relationship between time on task as measured by the Modified COKER largely by questioning and responding interactions and student achievement is consistent with the findings for the six questioning and responding behaviors which were reported in an earlier section.

Conclusions

Based on the findings of this study, the following conclusions appear to be in order:

1. The 18 teaching behaviors from the "Make A Difference" model have not been proven effective for promoting achievement gains in total reading and total mathematics on the Stanford Achievement Test for academically talented black students in the upper elementary and secondary grades.
2. Different methods are appropriate for different outcome measures. No single style is best for all students and all objectives. The direct instruction model appears to be

best for fostering the kind of achievement measured by standardized achievement tests such as the Stanford.

3. High cognitive or noncognitive outcomes measures should be used to measure the effectiveness of programs such as "Make A Difference" designed to foster higher-level thinking skills and increased learner confidence.

Suggestions for Further Research

Based on the findings in this study, there is need for further research in this area. The following suggestions appear to be warranted:

1. The findings from this study supported the use of the direct instruction model for academically talented black students at the sixth grade and above who were predominantly of middle or high socioeconomic status. Findings for the efficacy of the direct instruction model for promoting achievement gains in reading and mathematics for primary level, low socioeconomic status students were consistent with the findings from this study for middle to high socioeconomic status students in grades six and above. This study should be replicated to determine the consistency of the findings.
2. All of the statistically significant relationships between the use of teaching behaviors from the "Make A Difference" model and student achievement outcomes were negative. The

18 teaching behaviors from the "Make A Difference" model were chosen primarily because they were believed to be associated with the development of higher level thinking skills or a nurturing classroom environment which were thought, in turn, to promote student achievement gains. It may be that training teachers to use the direct instruction model would be more productive for promoting achievement gains for academically talented black students. Therefore, a study of a teacher training program which focuses on the behaviors which constitute the direct instruction model and the relationships between those behaviors and the achievement of academically talented black students would be in order.

3. Of the 10 teaching behaviors from the "Make A Difference" staff development program which were found to have significant negative relationships with student achievement, six were more typical of an inquiry model than a direct instruction model. It is possible that these behaviors would have a positive relationship with achievement measures such as the Preliminary Scholastic Aptitude Test and Scholastic Aptitude Test which include more analytical thinking and problem solving and less recall of facts and information. It is also possible that these behaviors would have a positive relationship with the high cognitive level items on standardized achievement tests such as the Stanford. There is a need for such studies.

4. Of the 10 teaching behaviors from the "Make A Difference" staff development program which were found to have statistically significant negative relationships with student achievement, three involved affect or classroom climate. Further study is needed to determine (a) if a demanding climate in classrooms where the teacher exhibits high expectations which are clear to the students is more productive than a nurturing climate for academically talented black students in grades six and above and/or (b) if positive outcomes, such as those related to socialization goals, not measured on standardized achievement tests result from the use of these teaching behaviors.

APPENDIX A
MODIFIED CLASSROOM OBSERVATIONS KEYED FOR
EFFECTIVENESS RESEARCH INSTRUMENT
AND KEY

CLASSROOM OBSERVATIONS KEYED FOR EFFECTIVENESS RESEARCH[a]

SCHOOL	TEACHER	CLASS SIZE	DATE MO	DATE DAY	DATE YEAR	RECORDER	GRADE	VISIT

SUBJECT	CODES
	01 – Math 02 – Lang. Arts 03 – Science 04 – Soc Stu.

		1. Passive compliance	2. Active compliance	3. Answers quest. voluntarily	4. Answers quest. directed to him	5. Substantive question	6. Procedural question	7. Volunteers comment	8. Off-Task Questions or comments	9. Positive Off-Task (V or Non V)	10. Negative Off-Task (V or Non V)
PRESENTING	11. Explains, discusses, tells										
	12. Praises										
QUESTIONING	13. Open-ended/No wrong answer										
	14. Recall/rote/information										
	14a Use or application										
	15. Ampli/Eval/Elaborate-Students' own idea										
	16. Ampli/Eval/Elaborate-Other Students' idea										
	17. Status										
RESPONDING	18. Praises with explanation										
	19. Accepts-neutral/checks 'own perception'										
	20. Uses extends										
	21. Waits (cog)										
	22. Focusing/Cueing										
	23. Repeats after feedback										
	24. Listens/Observes/Pays attention										
	25. Tells, gives info										
PERSONAL RELATED	26. Proximity										
	27. Accepting Feelings										

Code (Redundancy)

1 – [illegible] of class
2 – ¼ of class
3 – ½ of class
4 – ¾ of class
5 – All of class

28. EQUAL RESPONSE OPPORTUNITY

TEACHER

Methodology			Affect	Nonverbal	Control
Student Expression	○	91. Discourages	○	105. Warm, congenial	
	○	92. Encourages	○	107. Nods, smiles	○ 108
Student Perplexity	○	93. Prevents	○	109. Tou/Pat/Hug	○ 110
	○	94. Fosters	○	111. Praise	○ 112
			○	113. Eye contact	○ 114
Mis-information	○	95. Accepts	○	115. Ignores	○ 116
	○	96. Corrects	○	117. Gesture/Sig'l/Rap	○ 118
			○	119. Shakes head/shh	○ 120
Strategy			○	121. Takes something	○ 122
	○	97. Inductive	○	123. Glares, frowns	○ 124
	○	98. Deductive	○	125. Holds, pushes	○ 126
	○	99. Transductive			
	○	100. Expository		Verbal	
Cognitive Level	○	101. Simple	○	127. Praise, non-sub	○ 128
	○	102. Complex	○	129. Agrees, supports	○ 130
			○	131. Pos ind attn	○ 132
			○	133. Reminds	○ 134
			○	135. Says stop	○ 136
			○	137. Firm/sharp	○ 138
			○	139. Sco/warns/pun	○ 140

Comments

*This instrument has been modified from Classroom Observations Keyed for Effectiveness Research (COKER) solely for use with the MAKE A DIFFERENCE project and with permission of Dr. Homer Coker.

For information regarding COKER please contact Dr. Homer Coker, School of Education, Georgia State University, Atlanta, Georgia.

MODIFIED
CLASSROOM OBSERVATIONS KEYED FOR EFFECTIVENESS RESEARCH*

(KEY)

SCHOOL	TEACHER	CLASS SIZE	DATE M/D	DATE YEAR	RECORDER	GRADE	VISIT
1 2 3	4 5 6				7 8		9 10

SUBJECT	CODES
	01 = Math 02 = Lang. Arts 03 = Science 04 = Soc Stu.

			1. Passive compliance	2. Active compliance	3. Answers quest. voluntarily	4. Answers quest. directed to him	5. Substantive question	6. Procedural question	7. Volunteers comment	8. Off-Task Questions or Comments	9. Individual Off-Task Disruption VI	10. Disruptive Off-Task (e.g. Hum VI)
PRESENTING	11. Explains, discusses, tells	V41	11	12	13	14	15	16	17	18	19	20
	12. Praises	V61	21	22	23	24	25	26	27	28	29	30
QUESTIONING	13. Open-ended/No wrong answer	V71	31	32	33	34	35	36	37	38	39	40
	14. Recall/rote/information	V81	41	42	43	44	45	46	47	48	49	50
	14a Use or application	V91	51	52	53	54	55	56	57	58	59	60
	15. Ampli/Eval/Elaborate-Students own idea	V101	61	62	63	64	65	66	67	68	69	70
	16. Ampli/Eval/Elaborate-Other Students' idea	V111	71	72	73	74	75	76	77	78	79	80
	17. Status	V121	81	82	83	84	85	86	87	88	89	90
RESPONDING	18. Praises with explanation	V131	91	92	93	94	95	96	97	98	99	100
	19. Accepts-neutral/checks 'own perception	V171	101	102	103	104	105	106	107	108	109	110
	20. Uses extends	V181	111	112	113	114	115	116	117	118	119	120
	21. Waits (cog)	V191	121	122	123	124	125	126	127	128	129	130
	22. Focusing/Cueing	201	131	132	133	134	135	136	137	138	139	140
	23. Repeats after feedback	221	141	142	143	144	145	146	147	148	149	150
	24. Listens/Observes/Pays attention	251	151	152	153	154	155	156	157	158	159	160
	25. Tells, gives info	151	161	162	163	164	165	166	167	168	169	170
PERSONAL RECORD	26. Proximity		171	172	173	174	175	176	177	178	179	180
	27. Accepting Feelings		181	182	183	184	185	186	187	188	189	190

Code involvement:
1 - less than ¼ of class
2 - ¼ of class
3 - ½ of class
4 - ¾ of class
5 - all of class

28. EQUAL RESPONSE OPPORTUNITY

191 192

271 275

TEACHER

	Methodology				Affect	Nonverbal		Control	
324	Student	193	○	91. Discourages	205	338 ○	105. Warm, congenial		
325	Expression	194	○	92. Encourages	206	339 ○	107. Nods, smiles 216	○ 108	340
					207	341 ○	109. Tou/Pat/Hug 217	○ 110	342
326	Student	195	○	93. Prevents	208	343 ○	111. Praise 218	○ 112	344
327	Perplexity	196	○	94. Fosters	209	345 ○	113. Eye contact 219	○ 114	346
					210	347 ○	115. Ignores 220	○ 116	348
328	Mis-	197	○	95. Accepts	211	349 ○	117. Gesture/Sig'l/Bap	○ 118	350
329	Information	198	○	96. Corrects	212	351 ○	119. Shakes head/sm 222	○ 120	352
					213	353 ○	121. Takes somethi 223	○ 122	354
330		199	○	97. Inductive	214	355 ○	123. Glares, frowns 224	○ 124	356
331		200	○	98. Deductive	215	357 ○	125. Holds, pushes 225	○ 126	358
332	Strategy	201	○	99. Transductive					
333		202	○	100. Expository			Verbal		
					226	359 ○	127. Praise, non-sub	○ 128	360
334	Cognitive	203	○	101. Simple	227	361 ○	129. Agrees, supports	○ 130	362
335	Level	204	○	102. Complex	228	363 ○	131. Pos ind attn	○ 132	364
					229	365 ○	133. Reminds	○ 134	366
					230	367 ○	135. Says stop	○ 136	368
					231	369 ○	137. Firm/sharp	○ 138	370
					232	371 ○	139. Sco/warns/pun	○ 140	372

Comments

*This instrument has been modified from Classroom Observations Keyed for Effectiveness Research (COKER) solely for use with the MAKE A DIFFERENCE project and with permission of Dr. Homer Coker.

For information regarding COKER please contact Dr. Homer Coker, School of Education, Georgia State University, Atlanta, Georgia.

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BIOGRAPHICAL SKETCH

Carole Lee Walker was born in Commerce, Texas, on November 17, 1942. She graduated from Commerce High School in 1960. She received a Bachelor of Arts degree in January, 1964, and a Master of Arts degree in August, 1967, from East Texas State University in Commerce. She married Paul M. McMillan in 1964, and moved to Jacksonville, Florida.

Her professional experience includes 22 years working in the Duval County Public Schools. This experience includes classroom teaching at the elementary level; working as a district level reading resource teacher; serving as project director for an ESEA Title IVC Project, "Improved Learning Through Personalized Instruction;" and being an elementary school principal. The accomplishment she is most proud of is that of opening the district's first academic magnet school, Stanton College Preparatory School, in August, 1981. She is currently the Director of Elementary Programs, Duval County Public Schools.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Education.

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Education.

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Education.

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May, 1987

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